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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/064,542

07/25/2002

Eileen Heider

2002-019

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09/07/2006

U.S. ARMY TACOM-ARDEC

ATTN: AMSTRA-AR-GCL

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EXAMINER

CRAIG, DWIN M

ART UNIT

PAPER NUMBER

2123

DATE MAILED: 09/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/064,542

Applicant(s)

HEIDER ET AL.

Examiner

Dwin M. Craig

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 31-49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 31-49 is/are rejected.
- 7) ☒ Claim(s) 39 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Claims 31-49 have been presented for examination.

#### ***Response to Arguments***

2. Applicant's arguments with respect to claims 31-49 have been considered but are moot in view of the new ground(s) of rejection.

- 2.1 An updated search based on Applicants' newly submitted claims has revealed new art.

#### ***Claim Objections***

3. Claims 39 are objected to because of the following informalities: there are two claim 39's. Appropriate correction is required.

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

The second instance of claim 39 has been renumbered to claim 49. It is further noted that the preamble to both of the claims depend from claim 38, clarification and/or amendment is requested as to which claim each of the two claim 39's depend upon.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 31-40 and 45-49 are rejected under 35 USC 102(b) as being anticipated by US Patent 6,263,255 *Tan*.

4.1 As regards independent claim 31, *Tan* discloses, *A model base controller comprising: a development environment comprising at least one recipe for a process, each said process defined by a plurality of models* (as regards the controller see Figure 13 “APCDAQ CONTROLLER” Col. 3 lines 25-32 as regards the development environment see Col. 5 lines 44-48 *et seq.* and Figures 14-20 “LABVIEW” and Col. 11 lines 4-16 and Figure 6 reference 630 “APPLICATION INTERFACE “ and reference 632 as regards a plurality of models see Figure 2, Figure 5 reference 506, Col. 6 lines 40-48 and Col. 2 lines 58-67), *with each said model corresponding to at least one process step within said recipe* (Figure 4 and Col. 6 lines 24-34 and Col. 1 lines 28-34); *an execution environment in operative communication with said development environment, and which execution environment comprises an execution platform capable of executing a recipe from said development environment* (Figure 8A and Col. 12 lines 30-42); *a coordination environment in operative communication with said execution environment and, through said execution environment, with said development environment, and which coordination environment coordinates information flow from said execution environment, and through said execution environment, said development environment and said model* (Figure 4 “EQUIPMENT INTERFACE #2” and Figures 6 & 7 specifically Figure 6 reference 626 and Figure 8D reference 808 and Figure 14 “DAQDLL” and Figures 15-24 and Col. 13 lines 45-67 and Col. 14 and Col. 15 lines 1-50); *a control level in operative communication with said coordination environment and, through said coordination environment, with said execution environment and said*

*development environment, and in operative communication with at least one controller which is capable of controlling at least one component in the execution of at least one process step as defined by said model and communicated by said coordination environment; and wherein, said controller sends a control command corresponding to a process step defined by said model communicated to said controller from said model within said development environment through said execution environment and through said coordination environment, to said component, and said component sends a component information element to said controller, which component information element is communicated through said coordination environment to said execution environment in which performance of said process step may be varied in accordance with said component information element* (Figures 13-24 and Col. 4 lines 53-67 and Col. 5 lines 1-9 and Col. 8 lines 29-50 the examiner notes that the IDL, Interface Definition Library is used for communications between the development environment, the coordination environment and the actual controller and Col. 7 and Col. 11 lines 17-37). Also see Col. 6 lines 53-67, Col. 7 and Col. 8 lines 1-10.

**4.2** As regards dependent claim 32 *Tan* discloses, *wherein the coordination of said model with said controller comprises a data flow between said model and said controller* (Col. 5 lines 62-67 and Col. 6 lines 1-8).

**4.3** As regards dependent claim 33, *Tan* discloses, *wherein said controller is adapted to control a plurality of said at least one components* (Figure 3 reference 304, Figure 4 reference 406, Figure 5 reference 504).

**4.4** As regards dependent claim 34, *Tan* discloses, *wherein said development environment further comprises a recipe generator communicatively coupled to said plurality of models, and*

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*comprising means to add or amend recipes* (Figure 4 and Col. 6 lines 24-34 and Col. 1 lines 28-34 and Figure 7 reference 703, the user can provide recipes).

4.5 As regards dependent claim 35, *Tan discloses, the model based controller further comprising at least one server being communicatively coupled to said coordination environment* (Figure 15 and Figure 22 “DAQ SERVER”).

4.6 As regards dependent claim 36, *Tan discloses, the model based controller further comprising at least one server being communicatively coupled to said development environment and to said plurality of models* (Figure 15 and Figure 22 “DAQ SERVER”).

4.7 As regards dependent claim 37, *Tan discloses, the model based controller wherein said coordination environment comprises a server* (Figure 15 and Figure 22 “DAQ SERVER”).

4.8 As regards dependent claim 38, *Tan discloses, the model based controller wherein said execution environment further comprises computing resources for real-time control of an execution mode* (Col. 2 lines 7-11).

4.9 As regards dependent claim 39, *Tan discloses, the model based controller wherein said execution environment further comprises means to display the execution of said process* (Col. 11 lines 4-16).

4.10 As regards newly renumbered claim 49, *this is the second claim 39 in applicants' listing; Tan discloses, the model based controller wherein said execution environment further comprises means to monitor and control said process* (Col. 11 lines 4-16).

4.11 As regards dependent claim 40, *Tan discloses, the model based controller wherein said at least one component comprises an operative component selected from the group consisting of a value, a sensor and a motor* (Figure 9 and Col. 16 lines 18-36).

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4.12 As regards dependent claim 45, *Tan discloses the model based controller wherein said execution environment further comprises at least one interface adapted to present information indicative of one of said models and said at least one component to a user (Col. 11 lines 4-16).*

4.13 As regards dependent claim 46, *Tan discloses, the model based controller further comprising code for enabling said user to employ said interface to modify said model (Col. 6 lines 42-47).*

4.14 As regards independent claim 47, *Tan discloses, a method of controlling a process, using a model based controller comprising: a development environment comprising at least one recipe for a process, each said process defined by a plurality of models, with each model corresponding to at least one process step with in said recipe; (as regards the controller see Figure 13*

*“APCDAQ CONTROLLER” Col. 3 lines 25-32 as regards the development environment see Col. 5 lines 44-48 et seq. and Figures 14-20 “LABVIEW” and Col. 11 lines 4-16 and Figure 6 reference 630 “APPLICATION INTERFACE “ and reference 632 as regards a plurality of models see Figure 2, Figure 5 reference 506, Col. 6 lines 40-48 and Col. 2 lines 58-67), an execution environment in operative communication with said development environment, and which execution environment comprises execution platform capable of executing a recipe from said development environment (Figure 8A and Col. 12 lines 30-42); a coordination environment in operative communication with said execution environment and, through said execution environment, with said development environment, and which coordination environment coordinates information flow from said execution environment, and through said execution environment, said development environment and said model (Figure 4 “EQUIPMENT INTERFACE #2” and Figures 6 & 7 specifically Figure 6 reference 626 and Figure 8D reference*

808 and Figure 14 “DAQDLL” and Figures 15-24 and Col. 13 lines 45-67 and Col. 14 and Col. 15 lines 1-50); *a control level in operative communication environment and, through said coordination environment, with said execution environment and said development environment, and in operative communication with at least one controller which is capable of controlling at least one component in the execution of at least one process step as defined by said model and communicated by said coordination environment; and wherein, said controller sends a control command corresponding to a process step defined by said model communicated to said controller from said model with in said development environment through said execution environment and through said coordination environment, to said component, and said component, and said component sends a component information element to said controller, which component information element is communicated through said coordination environment to said execution environment in which performance of said process step may be varied in accordance with said component information element; which method comprises the steps of: selecting a recipe associated with a process having at least one process step; generating a model associated with each process step within said process; issuing at least one control command associated with each model, which control command is communicated by said at least one controller to said at least one component; sending by said at least one component, responsively to said one control command, of at least one component information element to said at least one controller; and communicatively coordinating each said model with the at least one controller, wherein said at least one control command is generated in accordance with the at least one process step, and wherein the at least one process step is varied in accordance with said at least one component information element (Figures 13-24 and Col. 4 lines 53-67 and Col. 5 lines 1-9*



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and Col. 8 lines 29-50 the examiner notes that the IDL, Interface Definition Library is used for communications between the development environment, the coordination environment and the actual controller and Col. 7 and Col. 11 lines 17-37). Also see Col. 6 lines 53-67, Col. 7 and Col. 8 lines 1-10.

**4.15** As regards independent claim 48, Tan discloses, *a computer-readable medium, carrying thereon at least one sequence of instructions for controlling a physical process, wherein the execution of said at least one sequence of instructions for controlling a physical process, wherein the execution of said at least one sequence of instructions by at least one processor in communication with at least one controller and at least one component creates a model based controller comprising: a development environment comprising at least one recipe for a process, each said process defined by a plurality of models, with each said model corresponding to at least one process step within said recipe; an execution environment (Col. 7 lines 25-35) in operative communication with said development environment, and which execution environment comprises an execution platform capable of executing a recipe from said development environment (as regards the controller see Figure 13 “APCDAQ CONTROLLER” Col. 3 lines 25-32 as regards the development environment see Col. 5 lines 44-48 et seq. and Figures 14-20 “LABVIEW” and Col. 11 lines 4-16 and Figure 6 reference 630 “APPLICATION INTERFACE” and reference 632 as regards a plurality of models see Figure 2, Figure 5 reference 506, Col. 6 lines 40-48 and Col. 2 lines 58-67); a control level in operative communication with said coordination environment and, through said coordination environment, with said execution environment and said development environment, and in operative communication with at least one controller which is capable of controlling at least one component in the execution of at least*

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*one process step as defined by said model and communicated by said coordination environment; and wherein* (Figures 13-24 and Col. 4 lines 53-67 and Col. 5 lines 1-9 and Col. Col. 8 lines 29-50 the examiner notes that the IDL, Interface Definition Library is used for communications between the development environment, the coordination environment and the actual controller and Col. 7 and Col. 11 lines 17-37), *said controller sends a control command corresponding to a process step defined by said model communicated to said controller from said model within said development environment through said execution environment and through said coordination environment, to said component, and said component information element is communicated through said coordination environment to said execution environment in which performance of said process step may be varied in accordance with said component information element; and permits the at least one processor to perform the steps of: selecting a recipe associated with a process having at least one process step; generating a model associated with each process step with said process; issuing at least one control command associated with each said model, which control command is communicated by said at least one controller to said at least one component; sending, by said at least one component information element to said at least one controller; and communicatively coordinating each said model with the at least one controller, wherein said at least one control command is generated in accordance with the at least one process step, and wherein the at least one process step is varied in accordance with said at least one component information element* (Figure 4 “EQUIPMENT INTERFACE #2” and Figures 6 & 7 specifically Figure 6 reference 626 and Figure 8D reference 808 and Figure 14 “DAQDLL” and Figures 15-24 and Col. 13 lines 45-67 and Col. 14 and Col. 15 lines 1-50 and Figure 8A and Col. 12 lines 30-42). Also see Col. 6 lines 53-67, Col. 7 and Col. 8 lines 1-10.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Dependent claims 41-44 are rejected under 35 USC 103(a) as being anticipated by US Patent 6,263,255 *Tan* in view of US Patent 6,726,764 *Mutti*.

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**5.1** As regards dependent claim 41, *Tan* does not expressly disclose, *the model based controller wherein said at least one controller comprises a programmable logic controller.*

*Mutti* discloses using a programmable logic controller in a model based controller system (Figure 1 and Col. 7 lines 64-67 and Col. 8 lines 1-6).

*Tan* and *Mutti* are analogous art because they are from the same field of endeavor of model based controller systems.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a programmable logic controller of *Mutti* in the Advanced Process Control system of *Tan*.

The suggestion for doing so would have been to be able to have a programmable logic controller to produce a better semiconductor crystal, which would then allow for the production of a better semiconductor device and allow for tuning of the control parameters during actual production which in turn provides for a more efficient and economical production system, *see Mutti* Col. 3 lines 27-49, it is noted by the examiner that semi-conductor production is one the areas of the manufacturing art that requires the use of model based controllers.

Therefore, it would have been obvious to combine *Mutti* with *Tan* to obtain the invention specified in claims 41-44.

**5.2** As regards dependent claim 42, *Tan* discloses, *the model based controller wherein said coordination environment further comprises code for enabling communication* (Col. 7 lines 5-10).

5.3 As regards dependent claim 43, *Tan* discloses, *the model based controller wherein said coordination environment further comprises code for modifying at least one recipe associated with said controller* (Col. 12 lines 30-42).

5.4 As regards dependent claim 44, *Tan* discloses, *the model based controller wherein said code is responsive to at least one of said models* (Figure 24 and Col. 26 lines 13-24).

### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dwain M. Craig whose telephone number is (571) 272-3710. The examiner can normally be reached on 10:00 - 6:00 M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul L. Rodriguez can be reached on (571) 272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dwin McTaggart CRaig

  
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9/5/06